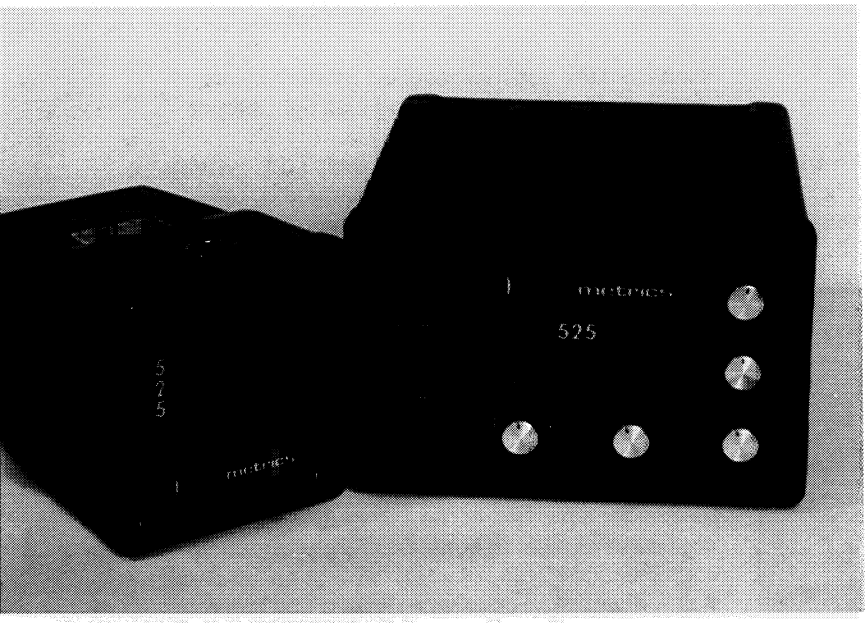

Infrared Imagers

Earth objects emit natural radiation invisible to the unaided human eye but visible to infrared scanning devices. Such devices serve a number of purposes, ranging from detection of heat loss in buildings for energy conservation measures to examining heat output of industrial machinery for trouble shooting and preventive maintenance. Among infrared systems commercially available is a product line manufactured by Inframetrics Inc., Bedford, Massachusetts, which traces its origin to NASA technology.

As an aid to automated testing of aerospace electronic components, Marshall Space Flight Center developed a series of especially sensitive infrared microscope systems which incorporated computer processing and TV display capabilities. The systems were used to examine electronic units for purposes of quality control and for detection of flaws correctible by design modification. The Marshall technology provided a base for further, company-

sponsored development which resulted in Inframetrics' sophisticated, TV-compatible infrared imaging equipment.

Representative of Inframetrics' systems is the Model 525 shown, a small, lightweight field instrument that scans infrared radiation and translates its findings into a TV picture of the temperature pattern in the scene being viewed; an accessory device permits viewing the thermal radiation in color. The accompanying "thermograms" show various applications of the instrument and the type of information displayed on the video screen. On the opposite page, the system is examining a house to detect heat loss and show where additional insulation is needed. The colors at the bottom indicate different temperature ranges; analysis of the color key shows where and to what extent heat is being lost, for example, the three windows at the left of the house are better insulated than the two at right. The photo below shows an intricate temperature pattern on a plastic molding die; the thermogram tells technicians that the mold is being improperly heated and identifies the problem area for corrective action. At bottom is a thermogram of a paper processing machine which informs analysts of a cooling problem. Another example, not illustrated, is use of infrared imaging by highway maintenance authorities as an inspection tool; truck-mounted Inframetrics equipment can identify incipient problem areas before signs of road deterioration are visible to the naked eye.

Industrial process control and preventive maintenance applications constitute the principal use of Inframatrics systems. The company's lengthy list of customers includes many of the largest U.S. industrial firms, foreign companies and organizations, survey firms which provide infrared thermography services, civil and military research facilities, and state/federal government agencies.